UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,466	11/08/2001	Erik Ekkel	US 018178 (D8333-09)	4995

7590   09/23/2005

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EXAMINER
ABEL JALIL, NEVEEN

ART UNIT	PAPER NUMBER
2165	

DATE MAILED: 09/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	10/006,466	EKKEL, ERIK
	Examiner	**Art Unit**
	Neveen Abel-Jalil	2165

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _13 June 2005_.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-21_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-21_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Remarks

1.   The Request for Reconsideration filed on June 13, 2005 has been received and entered.

Claims 1-21 are pending.

2.   Amendment to the abstract filed on June 13, 2005 is entered.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section
> 122(b), by another filed in the United States before the invention by the applicant for
> patent or (2) a patent granted on an application for patent by another filed in the United
> States before the invention by the applicant for patent, except that an international
> application filed under the treaty defined in section 351(a) shall have the effects for
> purposes of this subsection of an application filed in the United States only if the
> international application designated the United States and was published under Article
> 21(2) of such treaty in the English language.

4.   Claims 1, 3-7, 9-12, and 16-21 are rejected under 35 U.S.C. 102(e) as being anticipated

by Caplan (U.S. Pub. No. 2003/0050834 A1).

As to claim 1, Caplan discloses a system for peer-to-peer access to a collection of data,

comprising:

a. a musicbox (See page 9, paragraph 0109, wherein "musicbox" reads on "media

player") comprising:

i. a persistent data store, the persistent data store containing a plurality of individually selectable data files of a predetermined data format, some of the data files being pre-loaded onto the persistent data store (See page 10, paragraphs 0114-0116, wherein "individually selectable data files" reads on "playlist");

ii. a data communications interface operatively connected to a data communications network -to effect a peer-to-peer network (See page 6, paragraph 0078); and

iii. a controller operatively connected to the persistent data store and the data communications interface (See page 2, paragraphs 0014-0018, prior art); and

b. software executing in the musicbox (See page 6, paragraphs 0076-0077), the software capable of:

i. identifying other musicboxes executing instances of the software (See page 11, paragraphs 0142-0144, also see page 10, paragraphs 0123-0125);

ii. allowing peer-to-peer sharing of the data files with the identified other musicboxes, the sharing restricted to the identified other musicboxes having authorization to participate in the peer-to-peer sharing of data files (See page 13, column 2, lines 27-67, and see page 11, paragraphs 0129-0132);

iii. securing the data files from unauthorized access (See page 13, column 2, lines 27-67, and see page 11, paragraphs 0129-0132);

iv. reproducing the data files into a predetermined perceptible format (See page 12, paragraphs 0147-0150, also see page 1, paragraph 0006, prior art); and

v. allowing users of the software to manipulate the data files (See page 12, paragraphs 0150-0151, also see page 9, paragraphs 0107-0109).

As to claim 3, Caplan discloses wherein the data files comprise at least one of audiovisual works, music recordings, performance recordings, digitized film recordings, digitized video recordings, graphic work images, text, and software (See page 5, paragraphs 0054-0058).

As to claim 4, Caplan discloses wherein securing files from unauthorized access in step (b)(iii) comprises at least one of:

(1) securing a data file from unauthorized copying (See page, paragraphs 0027-0039);

(2) securing a data file for authorized access (See page 13, column 2, lines 54-67, also see page 6, paragraph 0072);

(3) securing an predetermined collection of data files from unauthorized copying (See page 13, column 2, lines 54-67, also see page 6, paragraph 0072); and

(4) securing an predetermined collection of data files for authorized access (See page 13, column 2, lines 54-67, also see page 6, paragraph 0072).

As to claim 5, Caplan discloses further comprising an audio-visual interface to export audio and/or visual data for further reproduction of content within the data files (See page 12, paragraphs 0152-0157).

As to claim 6, Caplan discloses wherein the musicbox is selected from at least one of specialized musicbox devices and personal computers (See page 12, paragraphs 0150- 0152, also see page 1, paragraph 0006, prior art).

As to claim 7, <u>Caplan</u> discloses further comprising a central server to provide registration services, the central server being a peer participant in the peer-to-peer network (See page 14, column 2, lines 1-29).

As to claim 9, <u>Caplan</u> discloses a method of distributing data files for a system of claim 1, comprising:

a.   pre-loading a plurality of data files onto the persistent data store from a larger set of data files (See page 14, column 1, lines 1-30);

b.   initializing access of the system to a peer-to-peer network (See page 13, column 2, lines 27-67, wherein "initializing access" reads on "activation");

c.   identifying other systems available on the peer-to-peer network (See page 13, column 2, lines 27-67);

d.   determining which of the data files on the other identified systems are not present on the persistent data store (See page 11, paragraphs 0129-0132);

e.   identifying the plurality of data files on the persistent data store to the other identified systems (See page 11, paragraphs 0129-0132, also see page 1, paragraph 0006, prior art);

f.   allowing a user to catalog the data files available on the identified systems (See page 12, paragraphs 0154-0157);

g.   allowing the user to select a data file from the plurality of data files identified on the peer-to-peer network (See page 11, paragraphs 0129-0132); and

h.   allowing the user to render the data files into a desired perceptible format (See

page 12, paragraphs 0147-0150).

As to claim 10, <u>Caplan</u> discloses comprising requiring a user to log into the peer-to-peer

network and presenting a user interface to the user appropriate to allow the user to select one or

more categories of data files available from a larger set of such categories (See page 12,

paragraph 0157, also see page 11, paragraphs 0130-0135).

As to claim 11, <u>Caplan</u> discloses further comprising requiring access by the musicbox to

the peer-to-peer network on a predetermined periodic basis (See abstract).

As to claim 12, <u>Caplan</u> discloses comprising allowing user to purchase a data file for

permanent access, the permanent access comprising downloading the data file onto a storage

medium of the user's choice (See page 11, paragraphs 0143-0144, also see page 12, paragraph

0150).

As to claim 16, <u>Caplan</u> discloses wherein step (b) further comprises accessing a central

server to accomplish the initializing of access to the peer-to-peer network, the central server

being a peer participant in the peer-to-peer network (See page 5, paragraphs 0058-0063).

As to claim 17, <u>Caplan</u> discloses wherein step (c) further comprises at least one of

identifying a musicbox to a central server, identifying a musicbox to other participants in the

peer-to-peer network by broadcasting an identity of the musicbox to the other participants in the

peer-to-peer network, and identifying a musicbox to other participants in the peer-to-peer

network by pinging for an identity of the other participants in the peer-to-peer network (See page

8, paragraph 0090, also see pages 11-12, paragraphs 0145-0147).

As to claim 18, Caplan discloses wherein step (e) further comprises programmatically

providing one or more participants in the peer-to-peer network with a description of content

available at a musicbox to allow users to scout for desired content (See page 11, paragraphs

0129-0135, also see page 11, paragraph 0145).

As to claim 19, Caplan discloses comprising:

a. gathering data of the user's usage of the musicbox into a user data profile (See page 12,

paragraphs 0152-0156, also see page 10, paragraphs 0116-0125)

b. making the user data profile available to a content provider (See page 13, column 1,

lines 26-67).

As to claim 20, Caplan discloses further comprising using the user data profile by a

provider of data files to generate messages targeted to the user based where the targeted

messages comprise at least one of advertisements, announcements, and samples of further data

similar to that in the profile data. (See page 13, column 2, lines 1-30, also see page 12, paragraph

0150).

As to claim 21, <u>Caplan</u> discloses a system for peer-to-peer access to a collection of data, comprising:

a.   means for storing persistent data, the persistent data comprising a plurality of data files of a predetermined data format, the data files further secured from unauthorized access (See page 13, column 2, lines 31-67);

b.   means for data communications, operatively connected to the means for storing persistent data (See page 11, paragraph 0144, wherein "storing" reads on "download", also see page 10, paragraphs 0124-0126); and

c.   means for accessing the persistent data, operatively in communication with the means for storing persistent data and the means for data communications (See page 11, paragraph 0144, also see page 10, paragraphs 0124-0126), capable of:

i.   identifying other systems executing the means for accessing the persistent data (See page 11, paragraphs 0129-0135);

ii.   allowing peer-to-peer sharing of the persistent data with the identified other systems, the sharing restricted to the identified other systems (See page 11, paragraphs 0129-0135, and see page 11, paragraph 0144); and

iii.   allowing users of the means for accessing the persistent data to manipulate the persistent data (See page 12, paragraphs 0150-0151, also see page 9, paragraphs 0107-0109).

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 2, 8, and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Caplan (U.S. Pub. No. 2003/0050834 A1) in view of Cooper et al. (U.S. Pub. No. 2001/0051996

A1).

As to claim 2, Caplan does not teach wherein the data files comprise works subject to

copyright and workings not subject to copyright.

Copper et al. teaches wherein the data files comprise works subject to copyright and

workings not subject to copyright (See page 8, paragraphs 0099-0126, also see page 1, paragraph

0006).

Therefore, it would have been obvious to a person having ordinary skill in the art at the

time of the invention was made to have modified Caplan to include wherein the data files

comprise works subject to copyright and workings not subject to copyright.

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to have modified Caplan by the teaching of Cooper et al. to include wherein the data

files comprise works subject to copyright and workings not subject to copyright because it

creates a secure and safe method for authentication and collecting royalties.

As to claim 8, Caplan does not teach comprising an authorization device, comprising at

least one of an electronic smart card, a mechanical smart card, and an optical key smart card.

Cooper et al. teaches comprising an authorization device, comprising at least one of an electronic smart card, a mechanical smart card, and an optical key smart card (See page 13, paragraphs 0187-00196).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have modified Caplan to include comprising an authorization device, comprising at least one of an electronic smart card, a mechanical smart card, and an optical key smart card.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Caplan by the teaching of Cooper et al. to include comprising an authorization device, comprising at least one of an electronic smart card, a mechanical smart card, and an optical key smart card because it creates a secure and safe method for payment and user profile storage.

As to claim 13, Caplan does not teach further comprising limiting a user to at least one of a read only or transient access mode.

Cooper et al. teaches further comprising limiting a user to at least one of a read only or transient access mode (See pages 3-4, paragraphs 0043-0046)

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention was made to have modified Caplan to include further comprising limiting a user to at least one of a read only or transient access mode.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Caplan by the teaching of Cooper et al. to include further comprising

limiting a user to at least one of a read only or transient access mode because it creates a secure

and safe method for authentication and collecting royalties.

As to claim 14, <u>Caplan</u> does not teach wherein step (b) further comprises:

i.   requiring the user to obtain a subscription;

ii.   registering the user once the subscription is obtained; and

iii.   collecting and distributing appropriate royalties to content creators at least

partially based on the user's subscription.

<u>Cooper et al.</u> teaches wherein step (b) further comprises:

i.   requiring the user to obtain a subscription (See page 3, paragraph 0042, wherein

"subscription" reads on "registered");

ii.   registering the user once the subscription is obtained (See page 7, paragraphs

0085-088, also see page 8, paragraph 0124); and

iii.   collecting and distributing appropriate royalties to content creators at least

partially based on the user's subscription (See page 17, paragraph 0275, also see page 13,

paragraph 0195).

Therefore, it would have been obvious to a person having ordinary skill in the art at the

time of the invention was made to have modified <u>Caplan</u> to include wherein step (b) further

comprises:

i.   requiring the user to obtain a subscription;

ii.   registering the user once the subscription is obtained; and

iii.   collecting and distributing appropriate royalties to content creators at least

partially based on the user's subscription.

It would have been obvious to one of ordinary skill in the art at the time the invention

was made to have modified Caplan by the teaching of Cooper et al. to include wherein step (b)

further comprises:

i.   requiring the user to obtain a subscription;

ii.   registering the user once the subscription is obtained; and

iii.   collecting and distributing appropriate royalties to content creators at least

partially based on the user's subscription because it creates a secure and safe method for

authentication and collecting royalties.

As to claim 15, Caplan as modified discloses wherein the subscription comprises at least

one of monthly fees, pre-paid content purchase, and per unit of content purchase (See page 12,

paragraphs 0150-0152).

Response to Arguments

7.   Applicant's arguments filed on June 13, 2005 have been fully considered but they are not

persuasive.

In response to applicant's argument that "Caplan does not teach or suggest a music box

that includes a persistent data store, or a data communications interface or a controller

operatively connected to the persistent data store" is acknowledged but not deemed to be persuasive.

The Examiner maintains that Caplan discloses a media player that renders streaming files of different content including music.

Nowhere in the claim language is "music box" defined in anyway differently than merely just that, a music box. The Examiner does not clearly view the different structure or function by the merely disclosure of a "a music box". Therefore, broadly interpreted, the "music box" of the instant application reads on "media player" disclosed in Caplan page 9, paragraphs 0108-0109 wherein viewing media files on a customized interface (i.e. portal) using customized controls is disclosed, those files are then capable of being stored on the user device to further participate in peer-to-peer sharing.

Windows media player as defined in a Windows XP 2000 environment (See the article entitled: Microsoft Windows®XP embedded-What's New) as having a persistent storage connection and a data communication interface.

In response to applicant's argument that "Caplan does not teach or suggest software executing in the music box" is acknowledged but not deemed to be persuasive.

The Examiner maintains that Caplan disclosed a media player (i.e. music box) application running on windows platform executing software on page 5, paragraph 0064, and on page 6, paragraph 0074. Anytime a user wants to search or access media files from the Internet, the media player application will execute software to render the request or broadcasted files. It is common knowledge, if an application runs on a computer, then it certainly executes software.

According Microsoft TV technologies article teaches that windows media player running in a

Windows environment executes software and integrates with variant hardware interfaces to

better accommodate diverse media content.

Conclusion

8.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

9.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Neveen Abel-Jalil whose telephone number is 571-272-4074.

The examiner can normally be reached on 8:30AM-5:30PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jeffrey A. Gaffin can be reached on 571-272-4146. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Neveen Abel-Jalil
September 19, 2005

CHARLES RONES
PRIMARY EXAMINER

		Application/Control No.	Applicant(s)/Patent Under Reexamination
Notice of References Cited		10/006,466	EKKEL, ERIK
		Examiner	Art Unit	
		Neveen Abel-Jalil	2165	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-			
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Microsfot Corporation. Microsoft Windows XP Embedded-What's New. 2001.
	V	Microsfot Corporation. Microsoft TV Technologies. Updated December 2001 (Specific Feature Direct X8 released 2000) page 8.
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Microsoft **Windows**® XP Embedded -

What's New

Windows XP Embedded is the componentized version of **Windows** XP, enabling rapid development of the most reliable and full-featured connected devices. Based on the same binaries as **Windows** XP Professional, **Windows** XP Embedded enables embedded developers to individually select only the rich features they need for customized, reduced footprint embedded devices.

Building upon the proven code base of **Windows** 2000, **Windows** XP Embedded delivers industry-leading reliability, security, and performance along with the latest multimedia, and web browsing capabilities as well as power management and device support. **Windows** XP Embedded also incorporates the latest embedded-enabling capabilities such as headless support, and flexible boot and **storage** options. In addition, **Windows** XP Embedded contains a completely re-designed toolset called **Windows** Embedded Studio that enables developers to rapidly configure, build, and deploy smart designs with rich applications.

For additional information, please see http://microsoft.com/**windows**/embedded

New Features in Windows XP Embedded

Reliable

Industrial Strength Robustness

Windows XP Embedded is built on the proven code base of **Windows** 2000, which features a 32-bit computing architecture, and a fully protected memory model. Reliability enhancements include the following:

- **Windows** File Protection: Protects core system files from being overwritten by application installations. If a file is overwritten, **Windows** File Protection will restore the correct version.
- Device driver rollback: If issues occur when new device drivers are added, a copy of the previously installed driver is saved enabling a user to roll back to the original device.
- **Windows** Driver Protection: Prevents accidental installation and loading of defective device drivers by comparing drivers against those listed on a database of known defective drivers. Defective drivers are prevented from loading and instead prompt an error message along with a link to a Web page providing more information.
- **Windows** Update: This feature is used for the delivery of critical operating system updates. Updates are downloaded to the user's computers and users can elect when to install them.

High Performance Platform

Performance enhancements include:

- Pre-emptive multi-tasking architecture: Designed to allow multiple applications to run simultaneously, with enhancements to ensure great system response and stability. For example, you can perform a network search while performing a spelling check at the same time. Enhanced memory management ensures the right pages are being pre-fetched from disk based on the application usage.

- Accelerated Boot and Log-on Process:
  - Quick resume from standby and hibernation: **Windows** XP Embedded significantly increases the speed of going into and coming out of standby and hibernate - which can be done without logging off from a user session.
  - New Boot Loader: Improvements to the boot loader accelerate driver response time and registry initialization.
  - Simultaneous Disk I/O Device Initialization: **Windows** XP Embedded accelerates the boot process by "prefetching" much of the OS at the same time that devices are being initialized, rather than running consecutively.
  - Dynamic Code Determination: The OS observes successive boots of the system and dynamically determines the code and data needed for the boot, and optimizes placement of these files on the hard disk, accelerating the boot process.
- Resource management: **Windows** XP Embedded provides a number of improvements in resource management over earlier versions of **Windows** including:
  - Scheduled Maintenance: Uses idle times to perform system maintenance activities such as reallocation of files for performance optimization and writing system restore files.
  - System Restore: Provides the ability to roll back faulty application and driver installations and undo damage to the system. Additionally, improvements to Help and Support simplifies the process of troubleshooting the system.
  - Self-tuning: Automatically improves hardware performance.
  - Memory Management: **Windows** XP Embedded anticipates the patterns of use of a set of applications, enabling the device to operate with less physical memory by identifying the correct combination of physical and virtual memory needed to satisfy the memory requirements of a set of applications.
- Enhanced Registry Performance: An improved caching scheme enables **Windows** XP Embedded to cache the results of common registry queries that the system knows will fail. To this end, **Windows** XP Embedded does not attempt to look extensively through the registry for queries the system knows does not exist. As a result, overall system performance is improved.

Enterprise Level Security

Features designed to ensure secure and safe device scenarios include the following:

- Encrypting File System (EFS) with multi-user support: Encrypts each file with a randomly generated key. The encryption and decryption processes are transparent to the user. In **Windows** XP Embedded, EFS can allow multiple authorized users access to an encrypted document.
- Internet Protocol Security: Uses cryptographic security services to enable organizations to transmit data

securely over a virtual private network.

- Smart Card support: **Windows** XP Embedded integrates smart card capabilities into the operating system, including support for smart card login to terminal server sessions.
- Kerberos authentication protocol: Provides secure industry-standard authentication.
- Internet Connection Firewall: A firewall client that can protect devices from common Internet attacks.
- Microsoft Passport: This online user-authentication service lets a consumer create a single sign-in name and password for easy, secure access to all Passport-enabled Web sites and services. Microsoft Passport frees developers from the need to build proprietary customer-authentication systems allowing them to concentrate instead on their sites□ own value-added features.
- Software restriction policies: This feature provides a policy-driven mechanism to identify software running in a domain and control its ability to execute. It can identify software that is hostile or unwanted and prevent it from executing on **Windows** XP Embedded-based devices.
- Certificate Services: **Windows** XP Professional supports multiple levels of a certification authority hierarchy and a cross-certified trust network using digitally signed certificates.
- Credential Manager: A secured store for password information. It allows users to input usernames and passwords once, and then have the system automatically supply that information for subsequent visits.
- Access Control Infrastructure: Support for thousands of security-related settings, such as user access permissions, that can be implemented individually to protect selected files, applications, and other resources. These features include:
    o Access Control Lists (ACL): Create a resource, such as a folder or file share, and either accept the default access control list settings or implement custom access control list settings.
    o Security Groups: Place users in the standard security groups, such as Users, Power Users, and Administrators, and accept the default ACL settings that apply to those security groups.
    o Group Policy: Use the Basic, Compatible, Secure, and Highly Secure Group Policy templates that have been provided with the operating system.
- Security Configuration Manager: This is a set of tools that you can use to manage security policy on your computer, organizational unit, or domain.

Full-Featured

Fully Componentized **Windows** XP Professional features

- **Windows** XP Embedded provides over 10,000 individual OS features, services, and drivers to select from to develop your customized, reduced footprint embedded device.

Extensive Device Support

New device driver support for **Windows** XP Embedded includes the following:

- Universal Serial Bus (USB): Supports a wide array of USB peripherals such as scanners, mice, keyboards, etc.
- IEEE 1394: An emerging standard for consumer video.
- Advanced Graphics Port (AGP): AGP technology provides a dedicated, high speed port through which large blocks of 3-D texture data can be moved between the computer's graphics controller and system memory. It frees CPU resources and enhances overall graphics performance.
- Plug and Play (PnP): Automatic discovery, configuration, and installation of devices without user intervention.
- UDF 2.01 (DVD Standard): UDF is the key **media** format on all DVD **media**, including DVD-Read Only Memory (DVD-ROM) and DVD Videos, as well as on CD/CD-RW format.

Latest Multimedia and Web Browsing

Experience rich multimedia and web browsing with the following new features:

- Internet Explorer 6: provides the latest web browsing technologies including visual refresh, playback support for Flash and Shockwave files, and privacy enhancements.
- **Windows Media™ Player** 8: The first **player** to bring together the most common digital **media** activities in a single easy-to-use place. New features include:
    - o Improved and more customizable user interface.
    - o Faster performance.
    - o Better audio and video quality with **Windows Media** Audio and Video.
    - o Enhanced MP3 playback with ID3v2 tag support and optional MP3 audio format ripping with third-party plug-ins.
    - o High performance Audio CD burning.
    - o Screen video controls and Digital Video Disc (DVD) playback support.
    - o Enterprise deployment features designed to deliver an easy way to standardize the features, user interface, configuration and deployment of **Windows Media Player** via Group Policies or the Active Directory™ service in **Windows** 2000 Server.
- Digital Rights Management (DRM) 8: **Windows Media** Digital Rights Management (DRM) secures content and manages access rights, enabling you to effortlessly listen to the latest copy-protected content released from major labels and artists without the need for add-ons or invasive copy-protection schemes.
- DirectX® 8 (Direct3D®, DirectDraw®, DirectPlay®): Enables rich graphics such as 3-D and full color along with video, interactive music, and surround sound.
- Broadcast Driver Architecture (BDA): This defines a framework that supports various component topologies for receiving digital and analog television.
    - o BDA indexes software components for network configuration and control, de-multiplexing, table parsing and Internet Protocol (IP) data delivery.
    - o Supports the main digital television standards, including Digital Video Broadcast (DVB) and Advanced Television Systems Committee (ATSC).

Latest User Interface and display technologies

Windows XP Embedded uses a new user interface that incorporates a fresh visual design and productivity enhancements.

- New User Interface: A componentized shell enables you to incorporate the latest **Windows** look into your embedded design.
- Fast User Switching: two or more users can simultaneously use the same device and have individual settings without completely logging out of the device.
- DualView: support two display interfaces with a single display adapter.
- ClearType: a new text display technology that triples the horizontal resolution available for rendering text through software.

Extensive Power Management

Features to enable granular control over power consumption include:

- Advanced Configuration and Power Interface (ACPI) 2.0: On an ACPI-compliant system, the operating

system manages, directs, and coordinates power so the system is instantly accessible to users when needed, while remaining silent and consuming the least possible power when not actively working. Power Management services enabled include Thermal control, Hot Plug PCI, LCD dimming, power schemes, wake-on support, Power Policy for individual peripherals, and more.

- Advanced Power Management (APM): Provides power management support for legacy systems based on the Advanced Power Management (APM) API.

Embedded enabling Features

New embedded-specific features include:

- Flexible Boot and **Storage** Options:
- In addition to magnetic disk, boot capability is offered for alternative nonvolatile (**persistent**) read/write **storage** devices such as Flash ROM and battery-backed RAM. Boot from CDROM is possible when the El Torito bootable CD-ROM driver is used in combination with the Enhanced Write Filter and ROM.
- **Windows** XP Embedded also provides support for DiskOnChip Flash, PCMCIA-ATA, Compact Flash, MultiMediaCard, and MemoryStick.
- Enhanced Write Filter: Enhanced Write Filter (EWF) re-routes selected disk I/O to memory or another **storage** medium, thus providing the appearance to the operating system that your read-only **storage** is writable.
- SDI Tools: SDI tools are used to facilitate the preparation and maintenance of run-time images.
- Device Update Agent: The Device Agent is a **Windows** service that runs on an embedded device. It is launched automatically at boot-time and is responsible for remote maintenance and/or administration tasks.
- Watchdog Timers: Watchdog timers provide a way to create very reliable systems by always guaranteeing that the system is in a known state. When a watchdog timer is used, **Windows** software must regularly notify the watchdog timer that it is functioning correctly. If for any reason the **Windows** software fails to notify the watchdog timer within a pre-programmed period of time, the system is assumed to be in a frozen or unusual state. When this happens, the watchdog hardware typically resets the system. This allows the system to autonomously recover from an unusual state. Several third party vendors offer watchdog timer hardware and corresponding device driver support.

Connected

Extensive Networking

Provides support for the leading networking technologies include the following:

- IrDA: **Windows** XP Embedded fully supports standards for this low cost, low power, cable replacement technology that enables any device to communicate from point to point when two devices are in line sight of each other.
- 802.11: **Windows** XP Embedded supports 802.11 wireless LAN technology that provides high bandwidth connectivity without wires.
- 802.1X: 802.1X provides secure access to the network to support wireless LANs and Ethernet. It enables interoperable user identification, centralized authentication, and dynamic key management and can secure both wired and wireless LAN access.

- Universal Plug and Play (UPnP): Universal Plug and Play (UPnP) is an architecture for pervasive peer-to-peer network connectivity of devices of all form factors, including intelligent appliances and wireless devices. UPnP is a distributed, open networking architecture that leverages TCP/IP and the Web to enable seamless proximity networking in addition to control and data transfer among networked devices in the home, office, and everywhere in between.
- PPP over Ethernet (PPPoE): PPPoE enables LAN users to gain individual authenticated access to high-speed data networks and provides an efficient way to create a separate connection for each user to a remote server.
- Extensible Authentication Protocol over Ethernet (EAPOE): This feature is an enhancement to Secure Wireless Local Area Networks (LANs), allowing servers to be deployed on Ethernet or Wireless LANs.
- Remote Desktop Protocol (RDP): RDP allows a thin client, such as a **Windows**-based terminal, to communicate with a terminal server across a LAN, WAN, or by means of a dial-up, ISDN, DSL, or VPN connection. Version 5.1 of the RDP client includes high-color resolution, local printer support, and local audio playback.
- Network Location Awareness: **Windows** XP Embedded includes components that detect information about the network the system is attached to, allowing for seamless configuration of the network stack for that location.
- Enhanced peer-to-peer networking support: Enables **Windows** XP Embedded to interoperate with earlier versions of **Windows** on a peer-to-peer level, allowing the sharing of all resources, such as folders, printers, and peripherals.
- Network Bridge: Simplifies the setup and configuration of small networks that use mixed network connections (such as Cat-5 Ethernet and wireless) by linking the different types of networks together.
- Internet Connection Sharing: Enables multiple devices to share a single Internet connection.
- Wireless LAN support: Provides zero configuration capabilities, which enables seamless roaming between different networks and/or ad hoc mode (peer to peer). **Windows** XP also includes a better mechanism for secure access control and key management based on 802.1x standard.
- IPv6: **Windows** XP Embedded supports Internet Protocol version 6 which provides longer IP addresses, better routing capabilities, and more integrated security. NOTE: The IPv6 software supplied in this release contains prerelease code and is not intended for commercial use. This software is made available for research, development, and testing only.

Real Time Communications

Support for the latest collaboration capabilities, including:

- TAPI 3.1: This feature provides H.323 version 2 enhancements to enable third-party gatekeepers or gateways to communicate with **Windows**-based unified messaging servers.
- Microsoft Message Queuing (MSMQ) support: MSMQ provides a new feature called Internet Messaging. This feature supports sending messages to queues on the Internet or within an Intranet by introducing a URL-style format name. DIRECT=HTTP://sitename/msmq/queuename.
- Outlook® Express: Enhancements to Outlook Express include greater protection from e-mail viruses. Users are prompted when mail is sent and can prevent files listed in a designated "bad" file type database from being opened or saved to disk.
- **Windows** Messenger: Built-in instant messaging capabilities including:
  - o Using text, voice, or video to communicate real time with friends.
  - o Easy collaboration with others by sharing files, applications, or white board drawings.
- NetMeeting®: Enables Internet conferencing and application-sharing.

Local and Remote Management

Compatibility with management tools includes the following:

- Integration with existing management tools: Devices are easily managed through interoperability with backend systems and tools including: **Windows** Management Instrumentation (WMI), **Windows** Scripting Host (WSH), Microsoft Management Console (MMC), and Microsoft Systems Management Server (SMS).
- Active Directory Client: Enables a device to participate in an Active Directory domain and experience the benefits of being an Active Directory client. For example, you can have constant access to all your information and software, regardless of which device you are using and whether or not you are connected to the network□with the assurance that your data is safely maintained and available.
- Remote GUI Desktop with Terminal Services: Provides terminal services that can be used for remote GUI management of an embedded system.
- Roaming User Profiles: Enhancements include improved roaming when unable to unload a user□s profile and improved interoperability with offline folders.
- Improved Group Policy support: This feature enhances the Group Policy Administrative Template extension snap-in making it possible to view detailed information about the different available policy settings such as Remote Assistance settings, Control Panel settings etc.

Rapid

Rapidly Start a Design: Reduce the time it takes to build an initial image with the following new features and the new **Windows** Embedded Studio tools:

- Target Analyzer: This tool probes the target device hardware and analyzes its contents, ensuring that your run-time image will support your chosen hardware.
- Design Templates: Quickly generate a base configuration by selecting a Design Template that includes all the basic functionality you need for a specific device. **Windows** XP Embedded includes the following Design Templates:
- Advanced Set Top Box
- Basic Set Top Box
- Digital Set Top Box
- Home Gateway
- Information Appliance
- Kiosk/Gaming Console
- Network Attached **Storage**
- Retail Point Of Sale Terminal
- **Windows**-Based Terminal Professional

Fast OS Customization and Build Process

- Target Designer: This tool enables you to create a bootable run-time image for a target device. Functionality in Target Designer includes:

      o Advanced component browsing; multiple tree views and customizable filters for easy discovery of desired features.
      o Intuitive drag and drop user interface enables effortless integration of selected features.
      o Automated Dependency checking and issues list.
      o A Hosted, high-performance build process.

Streamlined Component Authoring

- Component Designer: This tool enables you to create, edit, and modify component definitions in an .sld file.
  - o The eConvert utility automatically converts any device .INF not already represented by a component into one.
  - o Create component □packages□ for redistributing an embedded feature-set, component updates, and cross-team application development.

Powerful and familiar Development Tools

- Visual Studio®: Enables you to build powerful embedded applications with the same, standards-based, familiar tools used for mainstream application development by more than six million developers worldwide. Visual Studio is a complete application development package, with tools for analyzing and modeling all aspects of an application□so that developers can design efficient architectures and reduce time to market. They can also choose the programming language they know best□and the language that is best suited to the solution, including Microsoft Visual Basic®, Visual C++®, Visual J++®, and Visual FoxPro®. With support for over 20 languages in Visual Studio .NET, developers can choose which language best suits their needs.

Leverage off-the-shelf hardware and applications

- Full Win32® API support: Utilize standard hardware and run standard off-the-shelf Win32 applications, drivers, or services with little or no porting required.

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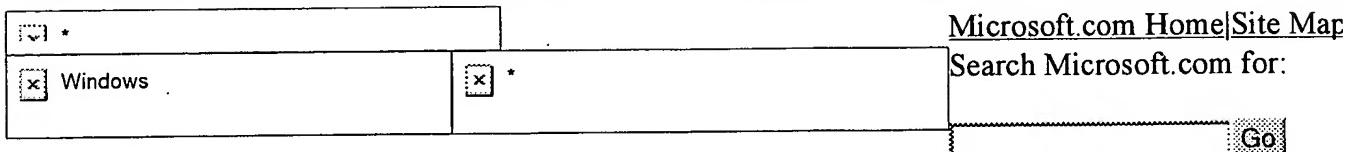
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Microsoft TV Technologies

Updated: December 4, 2001

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The TV broadcast architecture is continuing to undergo enhancements in new versions of Microsoft® **Windows®** operating systems, including **Windows** XP Home Edition and **Windows** XP Professional.

Windows XP provides an architecture designed to accept and render streams from many sources: audio/video streams, TV streams, and IP streams from the Internet. **Windows** XP architecture also provides support for the rich description of program content that is part of the data stream.

The goal for Microsoft investment in Microsoft TV Technologies is to ensure that video quality on the PC is beyond what is currently achieved on consumer electronics

devices.

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TV and the PC Experience

New technologies that integrate the PC with television make the PC more compelling for new audiences and new uses. The living room is a great new market for the PC architecture.

Opportunities for Advancing the PC Experience

If a PC includes a tuner for reception of ATSC or DVB digital broadcasts, the resulting TV viewing experience is better than can be achieved by spending many thousands of dollars on a standalone HDTV system. The PC can deliver programming guide options and a host of features supported by **Windows** XP that arent available from a standard TV.

These are scenarios that PC-architected solutions can enhance:

- Watch the TV programming you like when you like it, with live pause and action replay; view HDTV, premium (pay per view) TV, or interactive TVand share the capability with other PCs or TVs connected on the home network.
- Watch DVD movies.
- Play state-of-the-art interactive 3D games with real-time streaming audio on the Internet.
- Listen to music by playing audio streams purchased on the Web or broadcast on Internet radio.
- View photo albums and home movies, taking advantage of **Windows** XP video input, management, and playback capabilities, and displaying the output on the PC or large-screen TV-style display.
- View many forms of video content such as playing streaming video off the Web on demand.

Opportunities for New Products and Services

Hardware manufacturers in the PC industry can find new business opportunities in the convergence of consumer electronics and personal computing. This convergence also offers opportunities for cross-industry collaboration in creating new products and services.

Broadcast network capabilities provide a transmission infrastructure that can support services such as automatic software and file updates. Broadcast technologies enable

new applications and business opportunities such as:

- •New types of programming that combine the PC, the television, and the Internet.
- •Multimedia Internet content delivered by broadcast networks and stored locally on the PC, which reduces the Internet bandwidth bottleneck and improves the overall user experience.
- •Secure, billable, and scalable data servicessubscription services for software, electronic news, and entertainment, which encourage creation of new business models.

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Windows XP and the TV Experience

The new consumer version of the Microsoft **Windows** operating system, **Windows** XP, supports increasingly sophisticated PC/television applications with improved video mixing and rendering, **persistent storage** of program information, conditional access to content (such as pay per view), and scriptable applications.

New technologies built into Microsoft **Windows** include broadcast components that allow PCs to receive television programming, data services, and new forms of entertainment. These technologies are enhanced in **Windows** XP with new user-interface elements appropriate for use on large-screen display devices, such as a progressively scanned display or a television monitor.

Broadcast and video technologies in **Windows** are based on standards such as MPEG-2, and deliver DirectX®, Win32®, and ActiveX® APIs for easy programming by vendors.

These capabilities are also built on current and emerging standards for broadcast networks and Internet protocols, supporting the IP Multicast protocols for one-to-many transmission of real-time audio and video simultaneously across the Internet.

In total, **Windows** XP provides solutions for various TV needs, from the broadcast head-end servers to the PC and networked devices in the living room.

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Microsoft TV Technologies

Microsoft TV Technologies can accommodate video streams from many sources:

Cable	Multichannel Multipoint Distribution System (MMDS)
DVD	Satellite; Local TV satellite
Telco	Terrestrial broadcast
MPEG Encoding	**Windows Media™** Technologies

In addition to storing the stream, Microsoft TV Technologies can provide output to the graphics, audio, and data subsystems on the PC.

To enable the PC engine to add value, the "receiver" functions must be separated from "display/rendering" functions. The various MPEG streams are received, separated, and routed by host software on the PC, decoded using video acceleration on the graphics hardware, and rendered by an application in a window that the application controls. Copyrighted content must be protected without inconveniencing legitimate users.

To support these capabilities, **Windows** XP delivers advances in the Broadcast Driver Architecture, DirectX VA hardware acceleration, and VMR, the new Video Mixing Rendering component.

Broadcast Driver Architecture

Broadcast Driver Architecture (BDA) defines a framework that supports components for receiving digital and analog television. Hardware manufacturers can reduce the cost of hardware receivers and ensure interoperability by using the core components of the Microsoft TV Technologies broadcast driver architecture.

Microsoft TV Technologies components include network configuration and control, demultiplexing, table parsing, and IP Data delivery. It supports the main digital television standards, including Digital Video Broadcast (DVB) and Advanced Television Systems Committee (ATSC).

Broadcast Driver Architecture in Windows DDK
http://www.microsoft.com/whdc/devtools/ddk/default.mspx

DirectX VA for Hardware Video Acceleration

Decoding a video stream with pure software places a huge demand on the processor, affecting overall system

performance. Hardware that supports video acceleration shifts the load from the processor to the display chips on the graphics adapter, greatly increasing the capacity of the PC to render high-quality video and high-performance graphics.

Microsoft DirectX VA provides a standard interface for applications and device drivers to interact with the hardware acceleration of video decoding, including alpha blending for DVD subpicture support.

The DirectX VA specification, released as part of DirectX 8.0, provides important advantages over vendor-specific solutions:

- The DirectX VA interface provides cross-vendor compatibility between software applications and advanced graphics acceleration capabilities.
- Graphics hardware drivers that support DirectX VA provide generic access to the acceleration capabilities of their hardware.
- Hardware can be tested with generic drivers on standard systems, rather than requiring separate drivers and testing for each system configuration.

The DirectX VA interface extracts the most basic, computationally intensive portions of the MPEG-2 specification and supports their acceleration in hardware. DirectX VA can also support other key video codecs (ITU-T Recommendations H.263 and H.261; MPEG-1 and MPEG-4).

The establishment of this common interface is expected to increase the capability of computing systems to support video, increase the demand for software applications that provide this capability, and increase the demand for high-performance graphics capabilities.

DirectShow Video Mixing Renderer

The Microsoft DirectShow® Video Mixing Renderer (VMR) represents the next generation in video rendering on the **Windows** platform, replacing the Overlay Mixer component in previous **Windows** versions. DirectShow VMR is the default renderer for **Windows XP**.

The earlier graphics chip architecture has separate processing for video overlays on the back-end, but VMR moves it to the front-end and the 3D pipe. Interoperability is a real capability for a PC that includes support for DirectX VA and VMR integrated in chipsets, drivers, and

decoders.

DirectShow VMR combines the rendering and surface allocation functionality of several DirectShow filters into a single renderer for all scenarios. This new filter is designed for the current and future generation of adapters.

Software applications using DirectShow VMR can take advantage of these new features:

- Real mixing of multiple video streams, using the alpha-blending capabilities of Direct3D®-capable devices.
- **Media** playback support, including source color keying, overlay surface management, macrovision, frame-stepping, and improved multiple-monitor support.
- True windowless rendering. It is no longer necessary to make the video playback window a child of the applications window in order to contain the video playback. The VMRs new windowless rendering mode allows applications to easily host video playback within any window without having to forward window messages to the renderer for renderer-specific processing.
- Support for high-quality video playback concurrently on multiple **windows**.
- A new renderless playback mode, where applications can supply their own allocator component to get access to the decoded video image before it is displayed on the screen.
- The ability for applications to easily alpha-blend their own static image datasuch as channel logos or user-interface componentswith the video in a smooth, flicker-free way.
- The ability to add a third-party compositing component to implement effects and transitions between multiple video streams entering the VMR.
- Backward compatibility with existing applications.
- Support for the Microsoft DirectX VA specification.

The VMR uses the graphics processing capabilities of the systems graphics adapter exclusively; it does not perform any blending or rendering of video using the host processor, which would greatly impact the frame rate and quality of the video being displayed.

The Video Port Manager, now a separate component, manages video capture separately from rendering and coordinates with VMR for preview of captured data. Separating capture from rendering allows video port streams to be alpha-blended and time-shifting applications to capture data in **PC storage** for delayed playback.

More Microsoft TV Technology Components

Other technologies in **Windows XP** include the following:

- **Microsoft Tuning Model.** A set of objects that enable applications to tune across various network types in a simple and uniform manner.
- **Scriptable Applications.** The Video Control OCX that provides a simple scripting API for TV and DVD applications. It can be combined with other ActiveX controls in a control container such as a Microsoft Visual Basic® application.
- **Guide Store. A persistent** mechanism for storing and retrieving information about programs, schedules, and tuning. It supports multiple guide data providers and is flexible and extensible.
- **Conditional Access.** The ability to limit access to a service such as a TV channel based on certain conditions, such as payment of a subscription for a channel or one-time fee for a single program (pay per view).

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Guidelines for Hardware and Driver Development

Windows XP includes a significant foundation for TV capabilities in three basic areas:

- **Easy Drivers.** Microsoft is making it easy to create drivers for TV receiver modules. When using the Microsoft TV architecture, drivers for TV receiver modules can be relatively simple and low cost, because many functions are performed in software.
- **DirectShow Filters.** In the DirectShow environment, developers can write any kind of filters, but Microsoft provides a wide range of useful TV-related filters so that developers dont have to do all the work.
- **Easy TV Applications.** In **Windows** XP, Microsoft does not provide a TV application, but does provide many useful custom OCX controls, to make it easy for developers to create TV applications.

TV and Broadcast Driver Architecture
http://www.microsoft.com/ hwdc/ hwdev/ tech/ stream/ broadcast/ default.mspx

Designers must ensure that PCs and related computer devices can do everything the TV, VCR, set-top box, and high-fidelity stereo system can do. This requires careful design decisions for adding features to the PC that deliver more than just the attributes of traditional TV.

The following brief guidelines assume that you are familiar with the related display and video technical terminology. Driver and software development details are provided in the **Windows** DDK and Microsoft Platform SDK.

Broadcast Architecture in Platform SDK
http://msdn.microsoft.com/ library/ psdk/ ba/ intro/ ba_start.htm

Meet "Designed for Windows" Requirement

DirectX VA 1.0 was released as part of DirectX 8 in 2000. Support for DirectX VA becomes a requirement for the **Windows** Logo Program for hardware as of July **2001**. Drivers and decoders that claim video acceleration capabilities must support DirectX VA.

Windows Logo Program Requirements
http://www.microsoft.com/whdc/winlogo/default.mspx

Design for Parity with Consumer Electronics

- Assess picture quality for image clarity, smooth resizing, and precision of frame delivery.
- Ensure that the PC meets or exceeds the video and audio quality of traditional consumer appliances.
- Check that rendering is accurate for high motion content.

Integrate Video and TV with the PC

- Increase quality of video capture and playback, including good scaling methods to eliminate banding.
- Deliver video with low latency when displaying video from both internal and external video devices.
- Support receiving digital TV broadcasts.
- Increase use of multiple screens and their display controllers. This allows a PC to run a word processing application in one room, while simultaneously supplying a DVD movie or TV content to a TV in another room.
- Separate "receiver" functions from "display" functions. The two will be linked by software running on the host processor. This allows different elementary streams such as MPEG video, audio, and data to be sent to the appropriate subsystems within the PC. It also prepares the way for the long-range goal of a video home network.
- Use Microsoft DirectShow for video playback.

Design Display Chips for DirectX VA

- Implement a fast and robust MPEG-2 and DVD subpicture

solution that supports the DirectX VA interface.
- Fully support YUV surfaces as textures for input to 3-D, such as conversion to RGB.
- Design maximal SVM/H.263/MPEG-4 feature support into next-generation products and expose them when they are fully tested.
- Move to preferred configurations and uncompressed surface types, and support memory-conserving globally unique identifiers (GUIDs) as defined for DirectX VA.

Microsoft DirectX VA Specification

http://www.microsoft.com/ whdc/ hwdev/ tech/ stream/ DirectX_VA/ default.mspx

Design Graphics Adapters to Support VMR

- Support DirectX VA hardware-accelerated video decoding.
- Support YUV and "non-power of 2" Direct3D texture surfaces.
- Provide the ability to StretchBlt from YUV to RGB DirectDraw surfaces.
- Support an RGB overlay or the ability to blend to a YUV overlay surface.
- Support high pixel-fill rates.
- Provide at least 16 MB of video memory if multiple video streams are to be blended together.

The actual amount of memory required is dependent on the image size of the video streams and resolution of the display mode being used.

DirectShow on the Web

http://www.microsoft.com/ directx/ dxm/ help/ ds/ oview/ basics_intro.htm

Terms

Alpha blending

Alpha or transparency blending attempts to approximate the way transparent and translucent surfaces distort light rays.

Deinterlacing

The process of translating an interlaced signal (used for TV and analog video) to a progressive scan signal (used for digital video and PC displays).

H.261, H.263

Recommended standards for motion video compression
published by the International Telecommunication Union.
See
http://www.itu.int ▭.

MPEG

Moving Picture Experts Group. The family of standards
used for coding audio-visual information (such as movies,
video, and music) in a digital compressed format.

OCX

An ActiveX control that is a reusable, stand-alone software
component that can be used to aid in building a new
application.

RGB

A computer color-display output signal comprised of
separately controllable red, green, and blue signals. RGB
monitors typically offer higher resolution than composite
monitors.

YUV

The method of color encoding for transmitting color video
images while maintaining compatibility with black-and-
white video.

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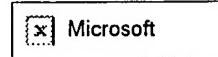
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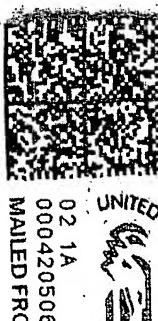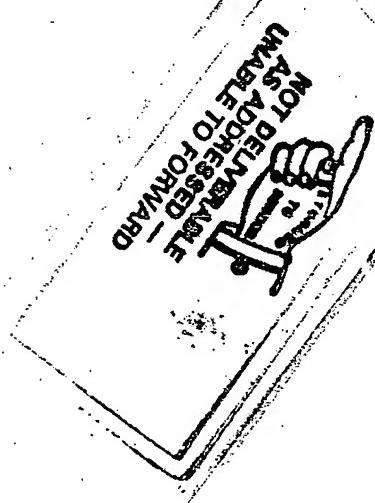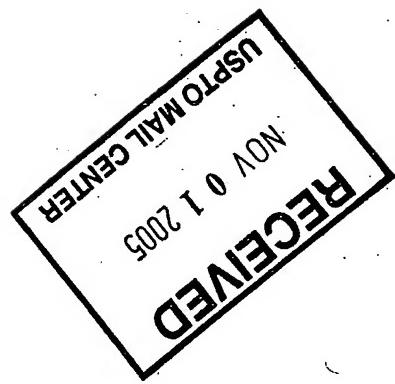
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